

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0610 BIOLOGY

0610/61

Paper 6 (Alternative to Practical), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

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Abbreviations used in the Mark Scheme

- ; separates marking points
- / separates alternatives within a marking point
- **R** reject
- **ignore** mark as if this material was not present
- **A** accept (a less than ideal answer which should be marked correct)
- **AW** alternative wording (accept other ways of expressing the same idea)
- underline words underlined (or grammatical variants of them) must be present
- **max** indicates the maximum number of marks that can be awarded
- **mark independently** the second mark may be given even if the first mark is wrong
- **ecf** credit a correct statement that follows a previous wrong response
- () the word / phrase in brackets is not required, but sets the context
- **ora** or reverse argument
- **AVP** any valid point

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| Question | Mark scheme | Marks | Comments |
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| 1 (a) | drawing uses single clear unbroken lines with no shading ; drawing occupies at least half of the space provided ; minimum detail is outer layer and central area with segments indicated ; correctly labelled structure ; | [4] | |
| (b) | pH of buffer X = 4 ; pH of buffer Y = 8 ; | [2] | |
| (c) | comparison/control/keep the same volume or amount (at the start) /AW ; | [1] | |
| (d) | A – 10, B – 19, C – 11, D – 11 ; cm ³ in column heading ; | [2] | all 4 correct measurements = 1 mark |
| (e) (i) | A has (9 cm ³) less volume or amount than B / ora ; B is clear and A is cloudy /AW ; | [2] | |
| (ii) | C and D are both the same volume or amount / 11 cm ³ ; both (as) cloudy /AW/look the same ; | [2] | |

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| Question | Mark scheme | Marks | Comments |
|-----------------|--|--------------|-----------------|
| (f) | <p><i>effect of pH on volume:</i></p> <p>pH 4 / acidic – more juice or pH 8 / alkaline – less juice ;</p> <p><i>effect of pH on appearance:</i></p> <p>pH 4 / acidic – juice more clear or pH 8 / alkaline – juice more cloudy / AW ;</p> <p><i>effect of pH on enzyme:</i></p> <p>enzyme works better / faster at pH 4 or acidic, works less well / slower at pH 8 or alkaline / AW ;</p> | [3] | |

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| Question | Mark scheme | Marks | Comments |
|-----------------|--|-------------------|-----------------|
| (g) (i) | <p><i>any two from:</i></p> <p>type of fruit / volume or amount of fruit / total volume of mixture / time to filter fruit / volume of buffer / AW ;;</p> | max [2] | |
| (ii) | <p><i>two improvements from:</i></p> <p>wider range of pH values / (stand for) longer time / stir (continuously for longer) / filter for longer / maintain same temperature / repeat for reliability or to eliminate anomalies or to calculate mean results / AVP ;;</p> | max [2] | |
| | | [Total 20] | |

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| Question | Mark scheme | Marks | Comments |
|------------------|--|--------------|-------------------------|
| 2 (a) (i) | two sites marked on Fig 2.1: wrist / neck / groin / temple / finger / toe / elbow / thumb / arm pit / back of knee ;; | max [2] | |
| (ii) | arteries near surface or skin / arteries can be pressed against bone or hard structure beneath / AW ; | [1] | |
| (b) | apply pressure (using finger) to pulse site / AW ; count pulse / number of beats per unit time / AW ; | [2] | |
| (c) (i) | 65 +/- 1 [mm] ; | [1] | |
| (ii) | (65 +/- 1 / 125 = 0.51 – 0.53 [mm]) | [1] | ecf from (c) (i) |
| (iii) | take multiple (more than one) readings for diameter across different positions ; calculate average length and use this value in calculation ; | [2] | |

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| Question | Mark scheme | Marks | Comments | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------------|-----------------|---------------|-------|-------|-----------|------|------|-------|--------------------|-------------------------------|-------------------------------------|--|------------------|--------------|--|--|---|---------|--|
| (iv) | <table border="1"> <tr> <td><i>feature</i></td> <td><i>vein</i></td> <td><i>artery</i></td> </tr> <tr> <td>shape</td> <td>round</td> <td>oval / AW</td> </tr> <tr> <td>wall</td> <td>thin</td> <td>thick</td> </tr> <tr> <td>(detail of) layers</td> <td>smooth / single layer / AW</td> <td>uneven / two or more layers / AW</td> </tr> <tr> <td>lumen / inner space / internal diameter / AW ;</td> <td>large / circular</td> <td>small / oval</td> </tr> <tr> <td></td> <td></td> <td>⋮</td> </tr> </table> | <i>feature</i> | <i>vein</i> | <i>artery</i> | shape | round | oval / AW | wall | thin | thick | (detail of) layers | smooth / single layer / AW | uneven / two or more layers / AW | lumen / inner space / internal diameter / AW ; | large / circular | small / oval | | | ⋮ | max [4] | <p>1 mark for all 3 correct features 1 mark for each pair of appropriate differences</p> |
| <i>feature</i> | <i>vein</i> | <i>artery</i> | | | | | | | | | | | | | | | | | | | |
| shape | round | oval / AW | | | | | | | | | | | | | | | | | | | |
| wall | thin | thick | | | | | | | | | | | | | | | | | | | |
| (detail of) layers | smooth / single layer / AW | uneven / two or more layers / AW | | | | | | | | | | | | | | | | | | | |
| lumen / inner space / internal diameter / AW ; | large / circular | small / oval | | | | | | | | | | | | | | | | | | | |
| | | ⋮ | | | | | | | | | | | | | | | | | | | |
| (d) (i) | <p>heart/pulse rate taken before and after exercise ; heart/pulse rate taken immediately after exercise ; exercise – same type/same length of time / AW ; students – same age/gender/clothing / AW ; repeat for each type of student / use groups of students ;</p> | max [4] | | | | | | | | | | | | | | | | | | | |

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| Question | Mark scheme | Marks | Comments |
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| (ii) | <p>table drawn with (ruled) lines and distinct columns / rows ;</p> <p><i>correct headings:</i></p> <p>type of student / AW ;</p> <p>pulse / heart rate before and after exercise with unit for pulse rate, i.e. beats per min / bpm / beats per unit time in the heading / s ;</p> <p>increase / difference in pulse rate / average pulse rate for all students ;</p> | max [3] | |
| | | [Total 20] | |